

Maryland Historical Trust

Maryland Inventory of Historic Properties number:

Name:

The bridge referenced herein was inventoried by the Maryland State Highway Administration as part of the Historic Bridge Inventory, and SHA provided the Trust with eligibility determinations in February 2001. The Trust accepted the Historic Bridge Inventory on April 3, 2001. The bridge received the following determination of eligibility.

MARYLAND HISTORICAL TRUST	
Eligibility Recommended <input checked="" type="checkbox"/> X	Eligibility Not Recommended _____
Criteria: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D	Considerations: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/> F <input type="checkbox"/> G <input type="checkbox"/> None
Comments: _____	

Reviewer, OPS: <u>Anne E. Bruder</u>	Date: <u>3 April 2001</u>
Reviewer, NR Program: <u>Peter E. Kurtze</u>	Date: <u>3 April 2001</u>

MARYLAND INVENTORY OF HISTORIC BRIDGES
HISTORIC BRIDGE INVENTORY
MARYLAND STATE HIGHWAY ADMINISTRATION/
MARYLAND HISTORICAL TRUST

MHT No. HA-1977

SHA Bridge No. 12030 Bridge name MD 136 over Big Branch

LOCATION:

Street/Road name and number [facility carried] MD 136 (Harkins Road)

City/town Harkins Vicinity X

County Harford

This bridge projects over: Road Railway Water X Land

Ownership: State X County Municipal Other

HISTORIC STATUS:

Is the bridge located within a designated historic district? Yes No X

National Register-listed district National Register-determined-eligible district

Locally-designated district Other

Name of district

BRIDGE TYPE:

Timber Bridge :

Beam Bridge Truss -Covered Trestle Timber-And-Concrete

Stone Arch Bridge

Metal Truss Bridge

Movable Bridge :

Swing

Bascule Single Leaf

Bascule Multiple Leaf

Vertical Lift

Retractable

Pontoon

Metal Girder :

Rolled Girder

Rolled Girder Concrete Encased

Plate Girder

Plate Girder Concrete Encased

Metal Suspension

Metal Arch

Metal Cantilever

Concrete X:

Concrete Arch Concrete Slab Concrete Beam X Rigid Frame

Other Type Name

DESCRIPTION:Setting: Urban _____ Small town _____ Rural X **Describe Setting:**

Bridge No. 12030 carries MD 136 (Harkins Road) over Big Branch in Harford County. MD 136 runs east-west and Big Branch flows north-south. The bridge is located in the vicinity of Harkins, and is surrounded by woods and farmland.

Describe Superstructure and Substructure:

Bridge No. 12030 is a single-span, 2-lane, concrete beam bridge. The bridge was originally built in 1934 and the abutments were repaired in 1994. The structure is 38 feet long and has a clear roadway width of 28 feet. The out-to-out width is 32 feet. The superstructure consists of T-beams which support a concrete deck and concrete parapets. The concrete deck is 7 inches thick and it has a bituminous wearing surface. The structure has pierced, concrete parapets and the roadway approaches have steel guard rails. The substructure consists of two (2) concrete abutments and there are flared, concrete wing walls. The bridge has a sufficiency rating of 95.9.

According to the 1996 inspection report, this structure was in satisfactory condition. The concrete beams have small rust spots with areas of surface erosion. The abutments have vertical and diagonal cracks and areas of surface erosion at the water line. The wing walls have spalling at the bottom, random cracks and surface erosion at the water line. The concrete parapet has medium to heavy scale with random cracking. Both railings have heavy spalling at the curb and the southern railing has exposed reinforcing bars.

Discuss Major Alterations:

According to the inspection report, the concrete abutments were repaired in 1994 and one (1) concrete beam (#6) was patched.

HISTORY:WHEN was the bridge built: 1934This date is: Actual X Estimated _____

Source of date: Plaque _____ Design plans _____ County bridge files/inspection form _____

Other (specify): State Highway Administration bridge files/inspection form**WHY was the bridge built?**

The bridge was constructed in response to the need for a more efficient transportation network and increased load capacity.

WHO was the designer?

State Roads Commission

WHO was the builder?

Unknown

WHY was the bridge altered?

N/A

Was this bridge built as part of an organized bridge-building campaign?

There is no evidence that the bridge was built as part of an organized bridge building campaign.

SURVEYOR/HISTORIAN ANALYSIS:

This bridge may have National Register significance for its association with:

A - Events _____ B- Person _____
C- Engineering/architectural character X

The bridge is eligible for the National Register of Historic Places under Criterion C, as a significant example of concrete beam construction. In addition, the structure is a good example of the State Roads Commission standard plan of 1933. The structure has a high degree of integrity and retains such character-defining elements of the type as longitudinal beams, slab, pierced parapets, abutments and wing walls.

Was the bridge constructed in response to significant events in Maryland or local history?

The earliest concrete beam bridges in the nation were deck girder spans that featured concrete slabs supported by a series of longitudinal concrete beams. This method of construction was conceptually quite similar to the traditional timber beam bridge which had found such widespread use both in Europe and in America. Developed early in the twentieth century, deck girder spans continued to be widely used in 1920 when noted bridge engineer Milo Ketchum wrote *The Design of Highway Bridges of Steel, Timber and Concrete* (Ketchum 1920).

Although visually similar to deck girder bridges, the T-beam span features a series of reinforced concrete beams that are integrated into the concrete slab, forming a monolithic mass appearing in cross section like a series of upper-case "T"s connected at the top. Thaddeus Hyatt is believed to have been the first to come upon the idea of the T-beam when he was studying reinforced concrete in the 1850s, but the first useful T-beam was developed by the Belgian Francois Hennebique at the turn of the present century (Lay 1992:293). The earliest references to T-beam bridges refer to the type as concrete slab and beam construction, a description that does not distinguish the T-beam design from the concrete deck girder. Henry G. Tyrrell was perhaps the first American bridge engineer to use the now standard term "T-beam" in his treatise *Concrete Bridges and Culverts*, published in 1909. Tyrrell commented that "it is permissible and good practice in designing small concrete beams which are united by slabs, to consider the effect of a portion of the floor slab and to proportion the beams as T-beams" (Tyrrell 1909:186).

By 1920, reinforced concrete, T-beam construction had found broad application in standardized bridge design across the United States. In his text, *The Design of Highway Bridges of Steel, Timber and Concrete*, Milo S. Ketchum included drawings of standard T-beam spans recommended by the U.S. Bureau of Public Roads as well as drawings of T-beam bridges built by state highway departments in Ohio, Michigan, Illinois, and Massachusetts (Ketchum 1920). By the 1930s the T-beam bridge was widely built in Maryland and Virginia.

Maryland's roads and bridge improvement programs mirrored economic cycles. The first road improvement of the State Roads Commission was a 7 year program, starting with the Commission's

establishment in 1908 and ending in 1915. Due to World War I, the period from 1916-1920 was one of relative inactivity; only roads of first priority were built. Truck traffic resulting from war related factories and military installations generated new, heavy traffic unanticipated by the builders of the early road system. From 1920-1929, numerous highway improvements occurred in response to the increase in Maryland motor vehicles from 103,000 in 1920 to 320,000 in 1929, with emphasis on the secondary system of feeder roads which moved traffic from the primary roads built before World War I. After World War I, Maryland's bridge system also was appraised as too narrow and structurally inadequate for the increasing traffic, with plans for an expanded bridge program to be handled by the Bridge Division, set up in 1920. In 1920 under Chapter 508 of the Acts of 1920 the State issued a bond of \$3,000,000.00 for road construction; the primary purpose of these monies was to meet the state obligations involving the construction of rural post roads. The secondary purpose of these monies was to fund (with an equal sum from the counties) the building of lateral roads. The number of hard surfaced roads on the state system grew from 2000 in 1920 to 3200 in 1930. By 1930, Maryland's primary system had been inadequate to the huge freight trucks and volume of passenger cars in use, with major improvements occurring in the late 1930's. Most improvements to local roads waited until the years after World War I.

In the early years, there was a need to replace the numerous single lane timber bridges. Walter Wilson Crosby, Chief Engineer, stated in 1906, "the general plan has been to replace these [wood bridges] with pipe culverts or concrete bridges and thus forever do away with the further expense of the maintenance of expensive and dangerous wooden structures." Within a few years, readily constructed standardized bridges of concrete were being built throughout the state.

In 1930, the roadway width for all standard plan bridges was increased to 27 feet in order to accommodate the increasing demands of automobile and truck traffic (State Roads Commission 1930). The range of span lengths remained the same, but there were some changes designed to increase the load bearing capacities. The reinforcing bars increased in thickness. Visually, the 1930 design can be distinguished from its predecessors by the pierced concrete railing that was introduced at this time.

In 1933, a new set of standard plans were introduced by the State Roads Commission. This time their preparation was not announced in the Report; new standard plans were by this time nothing special - they had indeed become standard. Once again accommodating the ever-increasing demands of traffic, the roadway was increased, this time to 30 feet. The slab span's reinforcing bars remained the same diameter but were placed closer together to achieve still more load capacity.

When the bridge was built and/or given a major alteration, did it have a significant impact on the growth and development of the area?

There is no evidence that the construction of this bridge had a significant impact on the growth and development of this area.

Is the bridge located in an area which may be eligible for historic designation and would the bridge add to or detract from the historic/visual character of the potential district?

The bridge is located in an area which does not appear to be eligible for historic designation.

Is the bridge a significant example of its type?

The bridge is a good example of the State Roads Commission standard bridge plans of the 1930s, which possesses a high degree of integrity.

Does the bridge retain integrity of important elements described in Context Addendum?

The bridge retains the character-defining elements of its type, as defined by the Statewide Historic Bridge Context, including longitudinal beams, slab, integral parapets, abutments and wing walls.

Is the bridge a significant example of the work of a manufacturer, designer, and/or engineer?

This bridge is a significant example of the work of the State Roads Commission in the 1930s.

Should the bridge be given further study before an evaluation of its significance is made?

No further study of this bridge is required to evaluate its significance.

BIBLIOGRAPHY:

County inspection/bridge files _____ SHA inspection/bridge files _____ X
Other (list):

Ketchum, Milo S.

1908 *The Design of Highway Bridges and the Calculation of Stresses in Bridge Trusses.* The Engineering News Publishing Co., New York.

1920 *The Design of Highway Bridges of Steel, Timber and Concrete.* Second edition. McGraw-Hill Book Company, New York.

Lay, Maxwell Gordon

1992 *Ways of the World: A History of the World's Roads and of the Vehicles That Used Them.* Rutgers University Press, New Brunswick, New Jersey.

Luten, Daniel B.

1912 *Concrete Bridges.* *American Concrete Institute Proceedings* 8:631-640.

1917 *Reinforced Concrete Bridges.* National Bridge Company, Indianapolis, Indiana.

Maryland State Roads Commission

1930a *Report of the State Roads Commission for the Years 1927, 1928, 1929 and 1930.* State of Maryland, State Roads Commission, Baltimore.

1930b *Standard Plans.* State of Maryland, State Roads Commission, Baltimore.

Taylor, Frederick W., Sanford E. Thompson, and Edward Smulski

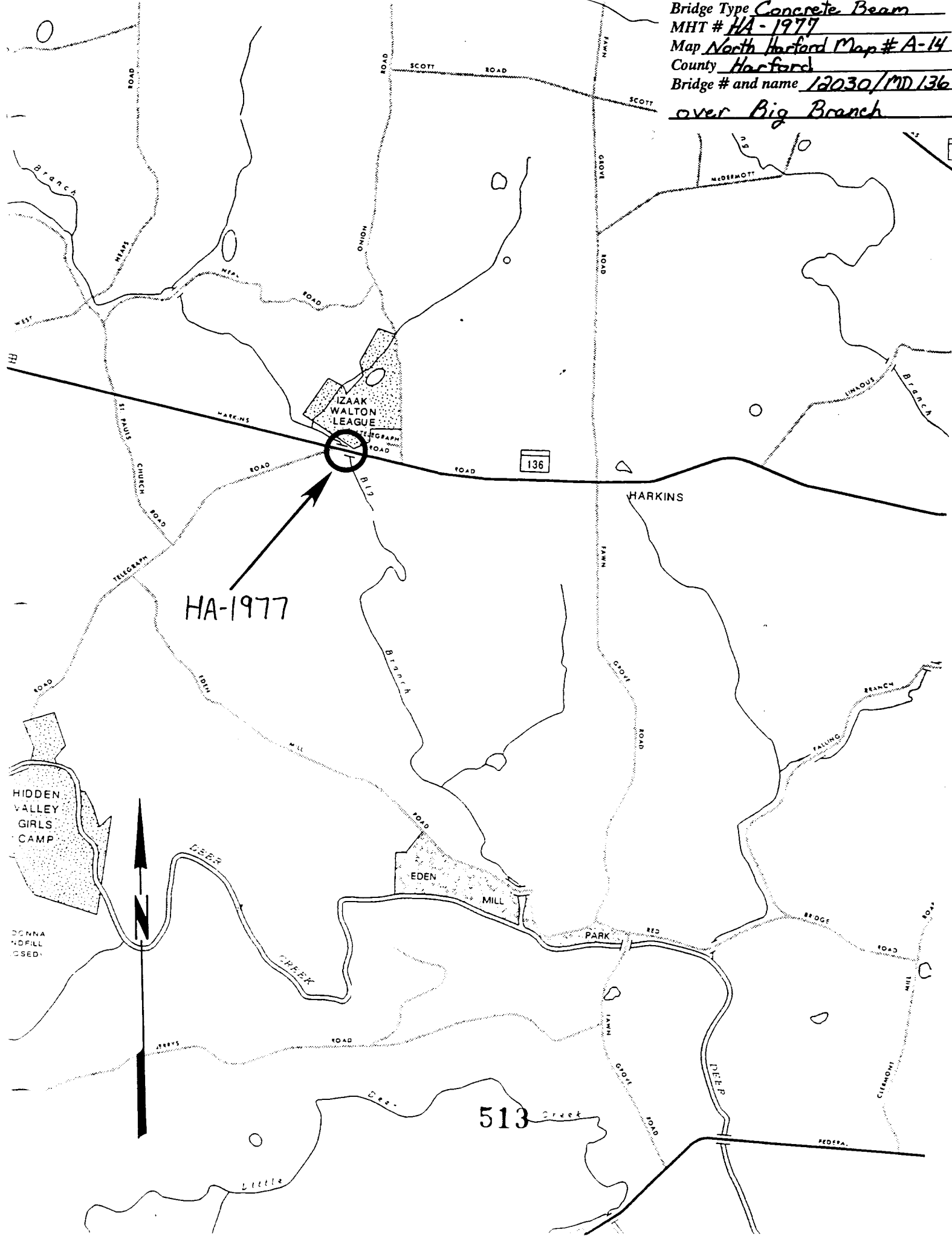
1939 *Reinforced-Concrete Bridges with Formulas Applicable to Structural Steel and Concrete.* John Wiley & Sons, Inc., New York.

Tyrrell, H. Grattan

1909 *Concrete Bridges and Culverts for Both Railroads and Highways.* The Myron C. Clark Publishing Company, Chicago and New York.

SURVEYOR:**Date bridge recorded** 2/25/97**Name of surveyor** Caroline Hall**Organization/Address** P.A.C. Spero & Co., 40 W. Chesapeake Avenue, Baltimore, MD 21204**Phone number** (410) 296-1685**FAX number** (410) 296-1670

Bridge Type Concrete Beam
MHT # HA-1977
Map North Hartford Map # A-14
County Hartford
Bridge # and name 12030/MD 136
over Big Branch





1. HA-1977
2. MD 136 over Big Branch (12.030)
3. Harford Co, MD
4. Caroline Hall
5. 3/97
6. MD SHPO
7. south side
8. 1 of 5



1. HA-1977
2. MD 136 over Big Branch (12030)
3. Harford Co. MD
4. Caroline Hall
5. 3/97
6. MD SHPO
7. roadway approach
8. 2 of 5



1. HA-1977

2. MD 136 over Big Branch (12030)

3. Hartford Co, MD

4. Caroline Hall

5. 3/97

6. MD SHPO

7. roadway approach

8. 3 of 5



1. HA-1977
2. MD 136 over Big Branch (12030)
3. Harford Co, MD
4. Caroline Hall
5. 3/97
6. MD SHPO
7. north parapet
8. 4 of 5



1. HA-1977
2. MD 136 over Big Branch (12030)
3. Hartford Co, MD
4. Caroline Hall
5. 3/97
6. MDSHPO
7. south parapet
8. 5 of 5

9301160

INDIVIDUAL PROPERTY/DISTRICT
MARYLAND HISTORICAL TRUST
INTERNAL NR-ELIGIBILITY REVIEW FORM

Property/District Name: Bridge #12030 Survey Number: HA-1977
 Project: MD 136 over Big Branch, Harford County Agency: SHA (state funded)
 Site visit by MHT Staff: X no yes Name Date
 Eligibility recommended X Eligibility not recommended
 Criteria: A B XC D Considerations: A B C D E F G None
 Justification for decision: (Use continuation sheet if necessary and attach map)

Based on the available information, we believe Bridge No. 12030 is eligible for the Register under Criterion C. The concrete girder bridge which was constructed in 1934 to a standard formula embodies distinctive characteristics of type and period. Although simple, it possesses design features, including a pierced railing and scored wing walls and abutments, which create a distinctive whole. The bridge appears to be intact and to retain integrity of historic character.

Documentation on the property/district is presented in: Project File

Prepared by: Rita Suffness

Elizabeth Harbold
Reviewer, Office of Preservation Services

July 7, 1993
Date

NR program concurrence: yes no not applicable

R. Harbold
Reviewer, NR program

7-8-93
Date

Survey No. HA-1977

MARYLAND COMPREHENSIVE HISTORIC PRESERVATION PLAN DATA - HISTORIC CONTEXT

I. Geographic Region:

☐ Eastern Shore (all Eastern Shore counties, and Cecil)
☐ Western Shore (Anne Arundel, Calvert, Charles, Prince George's and St. Mary's)
☒ Piedmont (Baltimore City, Baltimore, Carroll, Frederick, Harford, Howard, Montgomery)
☐ Western Maryland (Allegany, Garrett and Washington)

II. Chronological/Developmental Periods:

☐ Paleo-Indian 10000-7500 B.C.
☐ Early Archaic 7500-6000 B.C.
☐ Middle Archaic 6000-4000 B.C.
☐ Late Archaic 4000-2000 B.C.
☐ Early Woodland 2000-500 B.C.
☐ Middle Woodland 500 B.C. - A.D. 900
☐ Late Woodland/Archaic A.D. 900-1600
☐ Contact and Settlement A.D. 1570-1750
☐ Rural Agrarian Intensification A.D. 1680-1815
☐ Agricultural-Industrial Transition A.D. 1815-1870
☐ Industrial/Urban Dominance A.D. 1870-1930
☒ Modern Period A.D. 1930-Present
☐ Unknown Period (☐ prehistoric ☐ historic)

III. Prehistoric Period Themes:

☐ Subsistence
☐ Settlement
☐ Political
☐ Demographic
☐ Religion
☐ Technology
☐ Environmental Adaption

IV. Historic Period Themes:

☐ Agriculture
☒ Architecture, Landscape Architecture, and Community Planning
☐ Economic (Commercial and Industrial)
☐ Government/Law
☐ Military
☐ Religion
☐ Social/Educational/Cultural
☐ Transportation

V. Resource Type:

Category: Structure

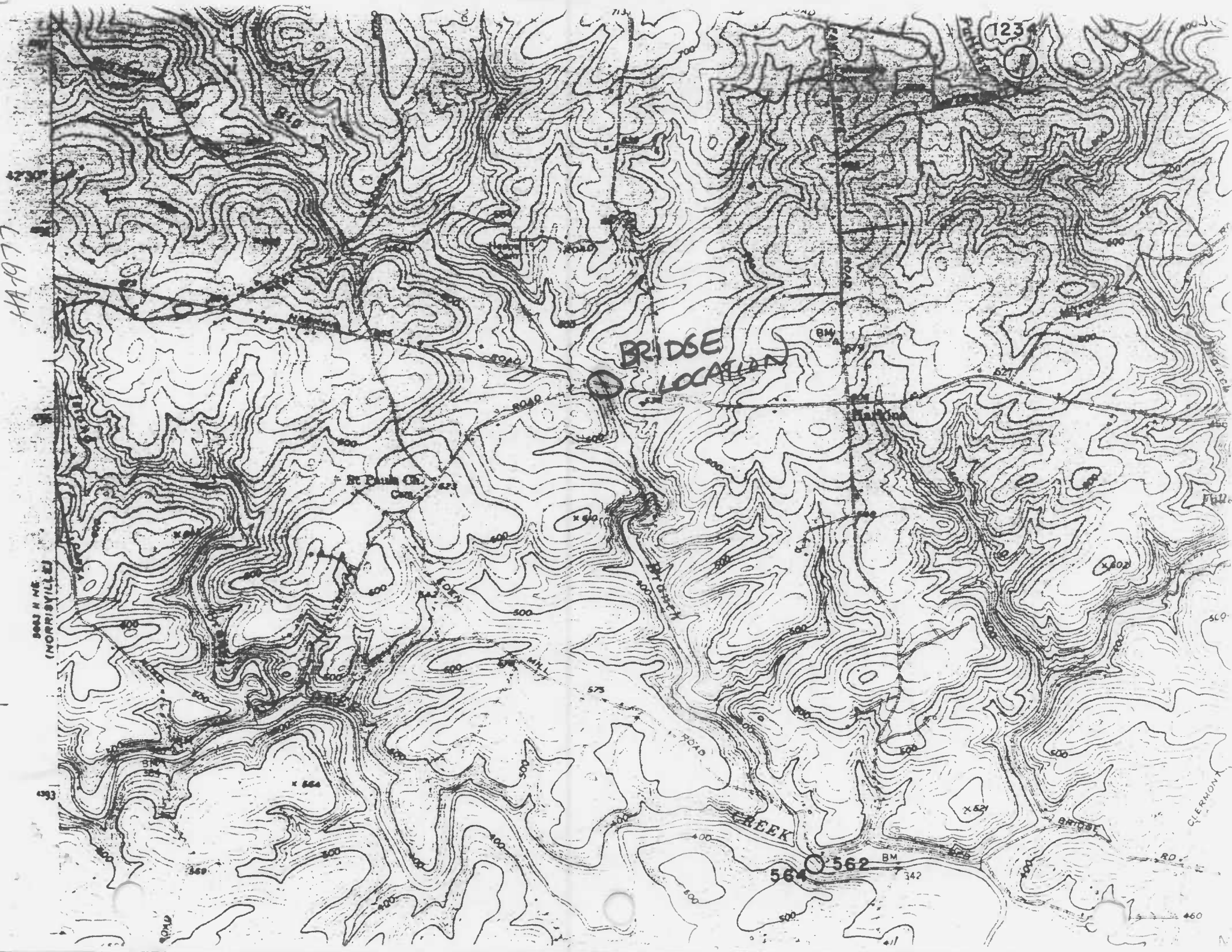
Historic Environment: Rural

Historic Function(s) and Use(s): Transportation

Known Design Source: Unknown

HA-977

3043 N.W. (MORRISVILLE)



BRIDGE LOCATION

St. Pauls Ch.

CREEK

CLERMONT

564 562 BM 342

123

42°30' N

460



Bridge No. 12030 Date 5/10/93

• MD RTE 136 over BIG BRANCH

• Other (Describe) NORTH PARAPET,

• EAST

• HA-1977

• _____

• _____

• _____

• _____



Bridge No. 17030 Date 5/10/93

• MD RTE. 136 over BIG BRANCH

• Other (Describe) NORTH PARAPET,

• WEST SIDE

• HA-1977

•

•

•

•



Bridge No. 17030 Date 5/10/93

MD RTE. 136 over BIG BRANCH

Other (Describe) UNDERSIDE OF DECK,

SOUTH DGE

HA-1977



Bridge No. 17030

5/10/93

• MD RTE. 136 o

RANCH

• Other (Describe)

SIDE OF DECK,

• NORTH SIDE

←

• LOOK

HA-1977

•

•

•

•



Bridge No. 17030

Date 5/10/93

MD RTE. 136 over BIG RANCH

Other (Describe) NO WING WALL

HA-1977